

UNCLASSIFIED

UNIVERSAL DOCUMENTATION SYSTEM

STS OPS FLIGHT PRD VOLUME II, PAYLOADS

PRD/PSP/OR/OD
GSFC AS SUPPLIER
DATABASE PULL 08052004

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STS OPS FLIGHT PRD VOLUME II, PAYLOADS
PROGRAM REQUIREMENTS DOCUMENT/PROGRAM SUPPORT PLAN/
OPERATIONS REQUIREMENT/OPERATIONS DIRECTIVE (PRD/PSP/OR/OD)
PROGRAM NUMBER: 20000

SECTION 1031 - INDEX

PUBLICATION DATE: 08/10/92 REVISION: 0000 RUN DATE: 08/05/04

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SECTION 2000 - TEST REQUIREMENTS/SUPPORT PLANS

PUBLICATION DATE: 08/10/92 REVISION: 0000 RUN DATE: 08/05/04
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[PRD] DATABASE RECORD: 344796 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: FLT-II APPROVAL DATE: 07/27/01
INITIAL DATE: 06/26/89
ITEM NUMBER: T1G DATE LAST CHANGED: 03/12/03
SECTION: 2000 TIME LAST CHANGED: 11:05:50

REQUESTER: JSC
TEST CODE: ALPHSE INFO STSALL
TRACKING NO. P01-07-2 P905-1

1. DESCRIPTION: STS STANDARD CAPABILITIES TO INTERFACE WITH
REMOTE POCC'S

The JSC MCC and STS flight elements (Orbiter, Upper Stages, etc.) are designed to provide channels of communications between payloads being flown and their User's respective Payload Operations Control Center (POCC). The requirements stated herein are for STS standard capabilities for a single flight. Multiple flight capabilities are TBD. Included as STS standard features are telemetry from the payloads, command capability to the payloads, voice voice communications with the Orbiter flight crew and ground operations personnel, and STS flight element telemetry and trajectory data to the POCC's. Generally four POCC's can be supported simultaneously during any single mission phase, and on a time-shared basis up to eight POCC's can interface with JSC during the mission period; exceptions for specific data are identified individually.

Payload data are proprietary to the Principal Investigator and routing, handling and use of these data by anyone other than the Principal Investigator must have prior authorization. GSFC is required to provide the communications interface capability between the

MCC and remote POCC's. User requirements that exceed the standard capabilities will be negotiated and costs/charges are to be paid by the user.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 08/16/01

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[PRD] DATABASE RECORD:      351752      REQUIREMENT STATUS: APPROVED R
DOCUMENT ID:                FLT-II      APPROVAL DATE:      09/24/01
                                     INITIAL DATE:      06/26/89
ITEM NUMBER:                T2G        DATE LAST CHANGED:  03/12/03
SECTION:                    2000      TIME LAST CHANGED:  11:05:50

REQUESTER:                  JSC
TEST CODE:                  ALPHSE      INFO      STSALL
TRACKING NO.                P01-07-2    P01-09-1
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1. DESCRIPTION: STS STANDARD CAPABILITIES TO INTERFACE WITH
REMOTE POCC'S

Payload Telemetry Support:

The STS is required to provide payload and STS telemetry data from the STS Mission Control Center (MCC-Houston) for distribution to the various Payload Operations Control Centers (POCC's). The MCC will provide a standard set of telemetry data types to GSFC. The data will be provided in either the standard 4800 bit NASCOM Blocked format (BDF) or in a bit contiguous serial format. GSFC is required to provide an interface point from which a payload user can route data to his POCC.

The following is a summary of the telemetry data types and general characteristics of the standard services offered. NSTS-21063 POCC Capabilities Document, describe the detailed standard capabilities offered to an STS Payload user. GSFC will provide an interface point from which a payload user can receive payload and STS data for transmission to the user's POCC. Users may request GSFC assistance for

providing the data transmission between GSFC and the user POCC. This request will be negotiated with the user, and costs/charges will be paid by the user.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 09/24/01

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[PRD] DATABASE RECORD:      360803      REQUIREMENT STATUS: APPROVED R
DOCUMENT ID:                FLT-II      APPROVAL DATE:      09/24/01
                                     INITIAL DATE:      06/26/89
ITEM NUMBER:                T3G        DATE LAST CHANGED:  03/12/03
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[PRD] DATABASE RECORD: 360803
ITEM NUMBER: T3G

SECTION: 2000 TIME LAST CHANGED: 11:05:50

REQUESTER: JSC
TEST CODE: ALPHSE INFO STSALL
TRACKING NO. P01-07-2 P01-09-1

1. DESCRIPTION: STS STANDARD CAPABILITIES TO INTERFACE WITH
REMOTE POCC'S

Payload Data Interleaver (PDI) Frame Data: The Orbiter PDI can interface with up to 5 payloads, process data from up to 4 payloads, and output to the PCMMU up to 64 kbps. PDI frame data may be output from JSC up to 4 data streams in either a BDF or serial mode. Current requirements include telemetry data rates ranging from 10 to 64000 bits per second.

The BDF data will be formatted in standard NASCOM 4800-bit blocks, and converted to IP packets for transmission. Block rates will be a function of the user's telemetry frame rate and/or bit rate. Specifically for telemetry bit rates less than a full BDF data field per second (4624 data bits), JSC will output a partially filled block with at least one frame of telemetry data. For bit rates equal to or greater than 4624 bits/seconds, JSC will output BDF blocks at a rate necessary to support the user's bit rate.

For Payload users requiring serial data, JSC will extract the PDI frame data from the OD and serialize the data and input it to a port on the MDM at JSC. Serial data and clock will be provided to the MDM. Specific MDM port assignments and routing information will be provided for the specific Payload. GSFC will provide an interface point from which a payload user can receive BDF (4800-bit blocks) or serial data and clock.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 09/24/01

FLP2000.003 PAGE SEQUENCE NUMBER: 4 REF UDS R G/A
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[PRD] DATABASE RECORD:      371590      REQUIREMENT STATUS: APPROVED R
DOCUMENT ID:                FLT-II      APPROVAL DATE:      07/27/01
                                     INITIAL DATE:      05/31/89
ITEM NUMBER:                T4G         DATE LAST CHANGED:  07/26/04
SECTION:                    2000        TIME LAST CHANGED:  09:27:43

REQUESTER:                  JSC
TEST CODE:                  ALPHSE      INFO      STSALL
TRACKING NO.                P01-07-2    P905-2
```

1. DESCRIPTION: STS STANDARD CAPABILITIES TO INTERFACE WITH
REMOTE POCC'S

Payload Parameter Frame Data: JSC can select User specified
payload parameters from the OD and format them into a standard PCM
telemetry format. This data can then be output in either the BDF
format or as serial data.

In the case of the BDF format, JSC outputs one BDF (one
complete telemetry frame) each second. For serial users, JSC
will provide data and clock at the users rate not to exceed 64Kbs.

MDM port assignments for BDF format users will be defined for the
specific payload.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 07/23/04

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[PRD] DATABASE RECORD:      376077      REQUIREMENT STATUS: APPROVED
DOCUMENT ID:                FLT-II      APPROVAL DATE:      08/28/87
                                     INITIAL DATE:      08/28/87
ITEM NUMBER:                T6G         DATE LAST CHANGED:  03/12/03
SECTION:                    2000        TIME LAST CHANGED:  11:05:50

REQUESTER:                  JSC
TEST CODE:                  ALPHSE      INFO      STSALL
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1. DESCRIPTION: STS STANDARD CAPABILITIES TO INTERFACE WITH
REMOTE POCC'S

STS Status Messages: JSC will output a status message in BDF
mode only, containing telemetry status and quality. These
messages will be output once each second to each POCC requiring

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[PRD] DATABASE RECORD: 376077
ITEM NUMBER: T6G

this support.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 08/05/88

[PRD] DATABASE RECORD: 378706 REQUIREMENT STATUS: APPROVED
DOCUMENT ID: FLT-II APPROVAL DATE: 06/26/89
INITIAL DATE: 06/26/89
ITEM NUMBER: T7G DATE LAST CHANGED: 03/12/03
SECTION: 2000 TIME LAST CHANGED: 11:05:50

REQUESTER: JSC
TEST CODE: ALPHSE INFO STSALL
TRACKING NO. P90 5-3

1. DESCRIPTION: STS STANDARD CAPABILITIES TO INTERFACE WITH
REMOTE POCC'S

Command Data:

JSC can receive from a POCC, via GSFC, command data on a circuit formatted in NASCOM 4800-bit blocks. Maximum data transmission can be 64 words of 16 bits each transmitted at the rate of one transmission every 2 seconds. The MCC will send to a POCC a Command Acceptance Pattern (CAP) message for each transmission received. Each CAP will be contained in a single NASCOM 4800-bit block. JSC can transmit real-time command histories and each history consisting of the most current 75 files can utilize a maximum of 9 NASCOM 4800-bit blocks. Command histories will be limited to a single JSC output which must be time-shared by all POCC's. When multiple POCC's require the same data, JSC will output duplicate messages with unique destination codes for each location. The block data rate for multiple blocks of command data input and CAP/History data output is one and eight blocks per second, respectively. Support for two POCC's simultaneously with command capability and a maximum of five POCC's for a given flight is required. GSFC is to provide the capability for two POCC's to command simultaneously with an interface capability provided for a

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[PRD] DATABASE RECORD: 378706
ITEM NUMBER: T7G

maximum of five POCC's. POCC access to command links will be
negotiated for each given flight.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 06/26/89

[PRD] DATABASE RECORD: 385013 REQUIREMENT STATUS: APPROVED
DOCUMENT ID: FLT-II APPROVAL DATE: 06/26/89
INITIAL DATE: 06/26/89
ITEM NUMBER: T8G DATE LAST CHANGED: 03/12/03
SECTION: 2000 TIME LAST CHANGED: 11:05:50

REQUESTER: JSC
TEST CODE: ALPHSE INFO STSALL

1. DESCRIPTION: STS STANDARD CAPABILITIES TO INTERFACE WITH
REMOTE POCC'S

Trajectory Data:

Trajectory data consists of vector and Orbiter attitude data. All
data shall be formatted in the NASCOM standard 4800-bit BDF. The
block rate for incoming and outgoing data at the MCC shall be a
maximum of five blocks per second. When multiple POCC's require
the same data, the MCC will output duplicate messages with unique
destination codes for each location. The data can be output to
one POCC or each of four POCC's for a single flight phase and on a
time-shared basis, up to eight POCC's can be addressed during a
single flight. Users are to provide for data circuits between GSFC
and POCC.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 06/26/89

[PRD] DATABASE RECORD: 402758 REQUIREMENT STATUS: APPROVED
DOCUMENT ID: FLT-II APPROVAL DATE: 08/28/87
INITIAL DATE: 08/28/87
ITEM NUMBER: T9G DATE LAST CHANGED: 03/12/03

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[PRD] DATABASE RECORD: 402758
ITEM NUMBER: T9G

SECTION: 2000 TIME LAST CHANGED: 11:05:50

REQUESTER: JSC
TEST CODE: ALPHSE INFO STSALL

1. DESCRIPTION: STS STANDARD CAPABILITIES TO INTERFACE WITH
REMOTE POCC'S

Vector Data: The JSC MCC can provide vector data to remote
POCC's. Vector data from the MCC to the remote POCC's may consist
of real-time state vectors or planning vectors. The MCC will
provide the data to GSFC via the NISN circuit.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 08/05/88

[PRD] DATABASE RECORD: 237413 REQUIREMENT STATUS: APPROVED
DOCUMENT ID: FLT-II APPROVAL DATE: 06/26/89
INITIAL DATE: 06/26/89
ITEM NUMBER: T10G DATE LAST CHANGED: 03/12/03
SECTION: 2000 TIME LAST CHANGED: 11:05:50

REQUESTER: JSC
TEST CODE: ALPHSE INFO STSALL

1. DESCRIPTION: STS STANDARD CAPABILITIES TO INTERFACE
WITH REMOTE POCC'S

The JSC MCC can accept Payload vector data from the remote POCC's.
This data will be shipped to the MCC via the NISN circuit. User's
are to provide payload vector data and data circuits to the GSFC
interface point.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 06/26/89

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[PRD] DATABASE RECORD:	405202	REQUIREMENT STATUS:	APPROVED
DOCUMENT ID:	FLT-II	APPROVAL DATE:	06/26/89
		INITIAL DATE:	06/26/89
ITEM NUMBER:	T11G	DATE LAST CHANGED:	03/12/03
SECTION:	2000	TIME LAST CHANGED:	11:05:50

REQUESTER: JSC
TEST CODE: ALPHSE INFO STSALL

1. DESCRIPTION: STS STANDARD CAPABILITIES TO INTERFACE WITH
REMOTE POCC'S

Orbiter Attitude Data: Orbiter real-time attitude data can be
transmitted from JSC on a request basis or on a once-per-
twelve-seconds cyclical basis. User's are to provide for data service
between GSFC and POCC.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 06/26/89

[PRD] DATABASE RECORD:	254016	REQUIREMENT STATUS:	APPROVED
DOCUMENT ID:	FLT-II	APPROVAL DATE:	06/26/89
		INITIAL DATE:	06/26/89
ITEM NUMBER:	T12G	DATE LAST CHANGED:	03/12/03
SECTION:	2000	TIME LAST CHANGED:	11:05:50

REQUESTER: JSC
TEST CODE: ALPHSE STSALL

1. DESCRIPTION: STS STANDARD CAPABILITIES TO INTERFACE
WITH REMOTE POCC'S

Orbiter Attitude Data (Planning): Selected planning attitude data
can be transmitted to the remote POCC's from the Attitude Time
Line on a requested basis. User's are to provide for data service
between POCC and GSFC interface point as required for timely receipt
of planning data.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 06/26/89

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[PRD] DATABASE RECORD:	252497	REQUIREMENT STATUS:	APPROVED
DOCUMENT ID:	FLT-II	APPROVAL DATE:	06/26/89
		INITIAL DATE:	06/26/89
ITEM NUMBER:	T13G	DATE LAST CHANGED:	03/12/03
SECTION:	2000	TIME LAST CHANGED:	11:05:50

REQUESTER: JSC
TEST CODE: ALPHSE STSALL

1. DESCRIPTION: STS STANDARD CAPABILITIES TO INTERFACE WITH
REMOTE POCC'S

NASCOM 4800-Bit Block Multiplexing:

Remote POCC's requiring data communications in the BDF mode may wish to receive and transmit data via a full duplex communications circuit. For data from JSC to a given remote POCC, the telemetry data types (PDI, PPF, ANC, STATUS) can all be multi-plexed and input to one port on the GSFC MDM at JSC. All other data (trajectory, commands, CAPS, command history data) will be blocked, multiplexed, and input to another single MDM port. GSFC is required to have the capability to select all messages destined for a single remote POCC and provide these messages multiplexed to the standard interface at GSFC. Data from remote POCC'S, received at JSC MCC (commands, trajectory) will be multi-plexed and available at an output port of the MDM at JSC. User's are to provide for data service between GSFC and POCC.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 06/26/89

[PRD] DATABASE RECORD:	255218	REQUIREMENT STATUS:	APPROVED
DOCUMENT ID:	FLT-II	APPROVAL DATE:	06/26/89
		INITIAL DATE:	06/26/89
ITEM NUMBER:	T14G	DATE LAST CHANGED:	03/12/03
SECTION:	2000	TIME LAST CHANGED:	11:05:50

REQUESTER: JSC
TEST CODE: ALPHSE STSALL

1. DESCRIPTION: STS STANDARD CAPABILITIES TO INTERFACE WITH
REMOTE POCC'S

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[PRD] DATABASE RECORD: 255218
 ITEM NUMBER: T14G

Voice Communications: A maximum of eight long-lines for POCC voice loops will be required between GSFC and the JSC. The voice loops include one FD, two A/G loops, and five coordination circuits. GSFC is required to provide the capability for conferencing so that each remote POCC can connect to all eight voice loops. Additional voice circuits between JSC or GSFC and the user's POCC's for private coordination services may be negotiated with all costs/charges to be paid by the user.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 06/29/89

[PRD] DATABASE RECORD: 251945 REQUIREMENT STATUS: APPROVED
 DOCUMENT ID: FLT-II APPROVAL DATE: 06/26/89
 INITIAL DATE: 06/26/89
 ITEM NUMBER: T15G DATE LAST CHANGED: 03/12/03
 SECTION: 2000 TIME LAST CHANGED: 11:05:50

REQUESTER: JSC
 TEST CODE: ALPHSE STSALL

1. DESCRIPTION: STS STANDARD CAPABILITIES TO INTERFACE WITH
 REMOTE POCCS

Teletype Communications: GSFC is required to provide the interface point and switching for two full-period operational TTY circuits between the MCC and remote POCCs. User's to provide for TTY circuits between GSFC and POCC's.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 06/26/89

[PRD] DATABASE RECORD: 22744 REQUIREMENT STATUS: APPROVED
 DOCUMENT ID: FLT-II APPROVAL DATE: 10/08/90
 INITIAL DATE: 07/31/90
 ITEM NUMBER: GS20G DATE LAST CHANGED: 03/12/03
 SECTION: 2000 TIME LAST CHANGED: 11:05:50

REQUESTER: GSFC 21 SOPS

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[PRD] DATABASE RECORD: 22744
ITEM NUMBER: GS20G

SUBREQUESTER: 21SOPS OAS
TEST CODE: FREFLT LAEORY LANDNG PREFLT
STSALL
TRACKING NO. P007-2 P010-1

1. DESCRIPTION: RTS NETWORK SUPPORT REQUIREMENTS

GSFC is required to provide 5SOPS/ RTS Network Support Requirements
in accordance with the following schedule:

Modification Required to AFSCN	36 Months
Multiple Payload Support	18 Months
Single Payload Support	12 Months
Shuttle Orbiter-Only Support	3 Months

RTS Network Support Requirements to be addressed to:

50SW/XP RANDY WAGNER (randy.wagner@shriever.af.mil)
FAX NO: (719) 567-6551

CC: 21SOPS/DOO FAX NO: (408) 752-3175
22SOPS/DOO/Brian Bayless (brian.bayless@shriever.af.mil)
FAX NO: (719) 567-3264

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 10/08/90

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SECTION 2750 - VOICE TERMINATIONS

PUBLICATION DATE: 08/10/92 REVISION: 0000 RUN DATE: 08/05/04

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 [PRD] DATABASE RECORD: 516361 REQUIREMENT STATUS: APPROVED R
 DOCUMENT ID: FLT-II APPROVAL DATE: 06/12/95
 INITIAL DATE: 08/21/91
 ITEM NUMBER: T7GT DATE LAST CHANGED: 03/12/03
 SECTION: 2750 TIME LAST CHANGED: 11:12:31
 REQUESTER: JSC
 TEST CODE: ALPHSE STSALL
 TRACKING NO. P108-3 PII-9-95

1. DESCRIPTION: PAYLOAD OPERATIONS CONTROL CENTER-1 (POCC-1)
 RESPONSIBLE AGENCY: JSC

REF	TEST CODE	CAP	NOTE	TERMINATION LOCATION
T1		T		MCC distribution
T2		T	1	Extension to GSFC
T3		T		GSFC distribution
T4		T		GSFC POCC
T5		T		GSFC NIC

NOTE: 1. Circuits activated only when GSFC POCC is required
 for support of GSFC payloads.

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 10/23/95

SUPPLIER: JSC AGENCY: JSC/DV (JOHNSON SPACE CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 06/12/95

CLASSIFICATION UNCLASSIFIED

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PROGRAM NUMBER: 20000

SECTION 2800 - VIDEO

PUBLICATION DATE: 08/10/92 REVISION: 0000 RUN DATE: 08/05/04

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[PRD] DATABASE RECORD: 559050 REQUIREMENT STATUS: APPROVED R
DOCUMENT ID: FLT-II APPROVAL DATE: 07/13/01
INITIAL DATE: 05/31/01
ITEM NUMBER: T3GT DATE LAST CHANGED: 03/12/03
SECTION: 2800 TIME LAST CHANGED: 11:10:43

REQUESTER: JSC
SUBREQUESTER: P01-05-1 P01-06-1 P01-07-1
TEST CODE: ALPHSE

1. DESCRIPTION: COMPRESSED VIDEO (CLI)

The MCC is to provide the capability to compress and transport compressed video at a rate (serial clock and data) not to exceed 384 kbps across the NISN WAN.

NISN is to provide one each dedicated serial clock and data service between JSC and GSFC, and DFRC and JSC at a line rate not to exceed 384 kbps for the transmission on a shared-use basis of compressed video products.

REF: FLT-I ITEM T15GT SECTION 2805 DBR 559047

SUPPLIER: GSFC AGENCY: GSFC/451 (GODDARD SPACE FLIGHT CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 07/13/01

SUPPLIER: JSC AGENCY: JSC/DV (JOHNSON SPACE CENTER)

SUPPLIER COMMITMENT: WILCO RESPONSE DATE: 07/13/01

THIS REPORT CONTAINS 14 PAGES

REPORT BY: FORM=06 DOC=FLT-II APV= APP SPL= G P1030=N